

United States Department of Energy

National Spent Nuclear Fuel Program

Quality Assurance Program Annual Trending Report

January–December 2004



February 2005

**U.S. Department of Energy
Assistant Secretary for Environmental Management
Office of Nuclear Material and Spent Fuel**

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National Spent Nuclear Fuel Program Quality Assurance Program Annual Trending Report

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**Idaho National Laboratory
Idaho Falls, Idaho 83415**

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National Spent Nuclear Fuel Program Quality Assurance Program Annual Trending Report

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C. Kido

Clarke Kido

(Signature)

Date: 2-25-05

**National Spent Nuclear Fuel Program
Document Preparer**

D. A. Armour

D. A. Armour

(Signature)

Date: 2-25-05

**National Spent Nuclear Fuel Program QA
QA Staff Manager**

SUMMARY

The 2004 National Spent Nuclear Fuel Program (NSNFP) trend report documents the analysis of Quality Assurance (QA) deficiencies for the identification of trends adverse to quality in the NSNFP. In April 2004, as the result of a transfer of responsibilities between the U.S. Department of Energy (DOE) Offices, the NSNFP is no longer tasked with the oversight of DOE spent nuclear fuel sites. The scope of the 2004 NSNFP trend report includes only the NSNFP or NSNFP supplier deficiency reports.

Deficiencies are identified as Deficiency Reports (DRs) and Corrective Action Requests (CARs). DRs/CARs are tracked in the NSNFP QA Corrective Action Tracking Trending System database. The NSNFP Program Support Organization (PSO) and NSNFP QA were categorized and evaluated for emerging trends. There were no deficient trends requiring management action that were identified as a result of this analysis.

NSNFP (PSO and QA)

The evaluation of data shows a steady decline in number of deficiencies from 33 in 1999, to 30 in 2000, to 20 in 2001, to 15 in 2002, to 11 in 2003, to 10 (4 DRs, 4 Conditions Corrected during Audit [CDAs], and 2 Condition Reports [CRs]) in 2004. Pareto analysis showed that 6 of 10 DRs in 2004 (60%) were attributed to the QA program, primarily in the area of document reviews. There are no significant increasing trends for 2004. The timeliness of DR closure continued to improve. There were no open DRs at the end of 2004.

NSNFP Suppliers

During 2004, the only active government sector suppliers to the NSNFP were the Idaho National Engineering and Environmental Laboratory under the contractor Bechtel BWXT Idaho, LLC and the Sandia National Laboratory. The Sandia supplier qualification audit identified one condition adverse to quality that was corrected during the assessment.

Additional Oversight Activities

An EM/RW audit team audited the NSNFP and identified two CRs that were included in this analysis. The CRs were related to the (1) NSNFP requirements matrix and (2) rationale for determining nonquality affecting activities. The corrective actions were completed by the NSNFP staff, and the CRs were closed, but the elapsed closure time was prolonged because of the protocols established for communication between DOE Offices and the NSNFP.

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ACRONYMS

CAR	Corrective Action Request
CATTS	Corrective Action Tracking Trending System
CDA	Corrected During Audit
CR	Condition Report
DOE	U.S. Department of Energy
DR	Deficiency Report
EDF	engineering design file
EM	Office of Environmental Management
NE-ID	U.S. Department of Energy Idaho Operations Office
NSNFP	National Spent Nuclear Fuel Program
PSO	Program Support Organization
QA	quality assurance
QARD	Quality Assurance Requirements and Description
RW	Office of Civilian Radioactive Waste Management
SNF	spent nuclear fuel

National Spent Nuclear Fuel Program Quality Assurance Program Annual Trending Report

1. INTRODUCTION

1.1 Purpose and Scope

The 2004 National Spent Nuclear Fuel Program (NSNFP) trend report documents the analysis of quality assurance (QA) deficiencies for the identification of trends adverse to quality in the NSNFP. On April 1, 2004, U.S. Department of Energy Idaho Operations Office (NE-ID) Memo NSNFP-QA-04-023 formally transferred responsibility for the QA oversight activities of the U.S. Department of Energy (DOE) sites with spent nuclear fuel (SNF) from the NSNFP QA Program to the DOE Office of Environmental Management (EM)/Office of Civilian Radioactive Waste Management (RW) QA Oversight Team. In a similar manner, Memo NSNFP-QA-04-024 requested the DOE SNF sites to continue to honor their commitments to the NSNFP and to provide their deliverables directly to the designated EM/RW contact L. Vaughan, EM 3.2). As a result of this transfer of responsibility, the scope of the 2004 NSNFP trend report includes only the NSNFP or NSNFP supplier deficiency reports (DRs). The 2004 trend report no longer evaluates the DOE SNF sites.

The analysis performed meets the requirements set forth in Section 16.2.6, "Quality Trending" of DOE/RW-0333P, *Quality Assurance Requirements and Description* (QARD). The trend analysis was performed in accordance with NSNFP Procedure 16.03. The results are presented in the following sections.

1.2 Description of Trending Process and Methodology

Deficiencies are categorized as conditions adverse to quality and significant conditions adverse to quality, and are documented as a DR or Corrective Action Request (CAR), respectively. DRs/CARs are assigned subject codes and direct cause codes. Significant conditions adverse to quality that are documented as CARs are also assigned a root cause code, based on formal root cause analysis. Codes are recorded in the NSNFP QA Corrective Action Tracking Trending System (CATTs) to facilitate analysis. The codes are sorted by calendar year into two groups: the NSNFP and the suppliers to the NSNFP. Any identified deficiencies from external assessments of the NSNFP, such as those performed by the EM/RW audit team, were combined with the NSNFP reports for analysis and trending. Other sources of information are also used for analysis to identify trends adverse to quality. Previous NSNFP QA trend analysis reports are used in the analyses.

Subject codes are assigned to the DR or CAR that reflect the primary QARD requirement that is violated. Direct cause codes are the apparent cause of a condition adverse to quality. Root cause codes reflect the identified root cause that results from formal analysis. The first two codes, subject and direct cause, are subjective and are validated by review of the DRs/CARs during analysis. Root cause codes reflect the results of formal analysis and do not require validation.

Subject codes, direct cause codes, and root cause codes are used to compare the frequency of occurrence of like deficiencies. Codes are sorted by organization for each calendar year to identify an increase in the frequency of occurrence over time. Where an increase in frequency is identified, each individual DR/CAR is evaluated to validate that common issues are identified and determine if an adverse trend is present.

Subject codes and direct cause codes are evaluated by Pareto analysis for each organization within a respective group. This analysis identifies the most frequent occurrence of deficiency codes. DRs/CARs are evaluated for the highest occurrence of a code to validate that common issues are identified. The highest occurrence of a code that reflects a common issue may represent an indicator of an adverse trend.

The DRs/CARs are evaluated for timeliness of corrective action, including (as applicable) a discussion of ineffective or overdue corrective actions for each organization. The duration of closed and open DRs/CARs are compared by calendar year to determine if an adverse trend in timeliness of corrective action is present.

Potential adverse trends are evaluated against the criteria for trends adverse to quality in NSNFP Procedure 16.03, "Quality Assurance Trending." If the analysis finds the trend to be adverse to quality, then a review of open and recently completed corrective actions is performed to determine whether mitigating actions are in process that may resolve the adverse trend. If there are no mitigating actions, then an evaluation of the trend for a significant condition adverse to quality is performed to determine whether a CAR will be issued to the responsible organization.

The discussion for each organization includes a description of documentation used as a part of the analysis, evaluations of selected subject and direct cause codes, and conclusions regarding trends adverse to quality. Appendix A provides tables that summarize the subject codes, direct cause codes, and root cause codes. In addition, Appendix A presents the figures used in the Pareto analyses to identify the most frequent occurrence of subject and direct cause codes. Appendix B shows figures for the timeliness of DR closure through December 31, 2004. Appendix C lists the DRs, CARs, and Conditions Corrected during Audit (CDAs) that were analyzed for this trending report. Appendix D lists the codes used for both direct and root causes. Administrative controls that may address adverse trends, lack of timely corrective action, or indicators for adverse trends are discussed. Conclusions that require action by management are identified under the Executive Summary and Results.

2. ANALYSIS

2.1 National Spent Nuclear Fuel Program

The NSNFP is composed of a Program Support Organization (PSO) and a QA Support organization. The DRs are assigned to each organization recognizing unique responsibilities. However, the analysis evaluated the data as representative of one organization.

During 2004, 10 deficiency reports were attributed to the NSNFP PSO and NSNFP QA organization with responsibility for closure. The 2004 NSNFP internal audit (04-NSNF-AU-001) identified five DRs. Three NSNFP assessments contributed one DR each. The EM/RW audit 04-DOE-AU-001 of the NSNFP identified two deficiencies termed Condition Reports (CRs) in their audit report. The NSNFP staff treated the CRs the same as DRs and provided corrective action closure documentation as directed by the EM/RW audit team leader. The two CRs from the EM/RW audit team were included with the eight NSNFP DRs for analysis and trending.

All 10 DRs assigned to the NSNFP PSO and QA organizations have been closed.

2.1.1 Subject Codes

Appendix A sorts the subject codes for the NSNFP by calendar year. The evaluation of subject codes for the NSNFP indicates an overall improvement in QA program implementation from 1999 through 2003. The distribution of subject codes presented in the Pareto figure shows the QA Program (60%) was the most frequent occurrence during 2004. The DRs attributed to QA program activities were reviewed for possible adverse trends. The Subject Code B.10, *Document Review*, was identified in three DRs as described below.

Subject Code B.10, *Document Review*

The frequency of occurrence of deficiencies under Subject Code B.10 was one DR in 1999, zero for 2000 through 2003, then increased to three DRs in 2004 as summarized below.

- Deficiency Report 04-NSNF-AU-001-CDA-001 identified a condition where a mandatory review comment record form was not included with the quality record for the Program Management Plan DOE/SNF/PP-033. A copy of the review comment record form was located, signed, and transmitted to records to close this condition during the assessment.
- Deficiency Report 04-NSNF-AU-001-DR-001 identified inconsistencies between several hard copy documents and the E-versions posted on the NSNFP website. The corrective action resulted in a change in the process used to post documents on the website. The original signed documents are now scanned and the resulting E-file is posted on the website. The NSNFP forms continue to be posted as Word files in order to facilitate user access.
- Deficiency Report 04-NSNF-5/13-DR-001 was a self-identified condition of a calculation error discovered after Engineering Design File (EDF)-17 was reviewed and approved. The corrective action resulted in revising the NSNFP Procedure 6.01 to apply the Document Action Request process for the review and approval of EDFs.

Evaluation

Evaluation of the DRs under Subject Code B.10 identified problems with implementing document reviews. The corrective actions have resulted in process improvements to reduce the potential for recurrence. This area should continue to be monitored for effectiveness.

2.1.2 Direct Cause Codes

Appendix A sorts the direct cause codes for the NSNFP by calendar year. The evaluation indicated an overall improvement in QA program implementation from 1999 through 2004. The direct causes were widely distributed over several categories such that there were no increasing trends. The Pareto distribution showed Personnel Error-Human Performance (70%) was the direct cause in 7 of 10 NSNFP deficiencies during 2004. Four of the 7 DRs were closed during the assessment. The other 3 DRs are evaluated below.

Direct Cause Code 02A, Personnel Error—Lack of Attention to a Task

- Deficiency Report 04-NSNF-AU-001-DR-001 identified inconsistencies between several hard copy documents and the E-versions posted on the NSNFP website. A process change was instituted to scan the signed originals and post the resulting E-files.
- Deficiency Report 04-NSNF-AU-001-DR-002 identified several quality records that were not properly generated in accordance with the implementing procedures. The identified conditions were corrected and closed. A separate comprehensive assessment (04-NSNF-S-003) of quality records was conducted in May 2004 to evaluate for extent of condition. The scope included all NSNFP PSO and QA quality records submitted after January 2002 to the NSNFP Document Control Coordinator. The records management process was found to be satisfactory.
- Deficiency Report 04-NSNF-AU-001-DR-003 identified several quality records with omissions, typos, missing signatures, or inconsistencies. The conditions were corrected and closed as a result of the quality records assessment (04-NSNF-S-003).

Evaluation

Evaluation of Direct Cause Code 02A, *Personnel errors related to the lack of attention to detail*, showed downward trends (13 in 1999, to 11 in 2000, to 10 in 2001, 6 in 2002, 5 in 2003) and increased slightly to 7 in 2004. Various process improvements and changes to implementing procedures have been instituted. Discrepancies between hard copy and E-files have been minimized. The number of personnel errors associated with generating, transmitting and storing records has declined. Personnel attention to detail should continue to be monitored for effectiveness.

2.1.3 Root Cause Codes

The evaluation of root cause codes for the NSNFP indicates an overall improvement in QA program implementation. There were no significant conditions adverse to quality identified during 2003 and 2004. No adverse trends are identified from this analysis. No further action is required as a result of this evaluation.

2.1.4 External Oversight of the NSNFP

DOE EM/RW conducted a compliance-based audit 04-DOE-AU-001 of the NSNFP. The audit team identified two CRs. The EM/RW audit team was accompanied by Nuclear Regulatory Commission observers, who agreed with the audit team's conclusions. The CRs are closed and described below.

- Condition Report NSNFP (EM)-04-D-024 identified omissions in the NSNFP QARD requirements matrix that did not identify all applicable implementing procedures for each QARD requirement. The NSNFP staff revised the matrix and notified the audit team. The EM/RW audit leader provided a letter for verification and closure of the completed corrective actions.
- Condition Report NSNFP (EM)-04-D-025 identified two Program Applicability Evaluations (PAE007 and PAE-009) that did not provide adequate rationale for the activities determined to be nonquality affecting. The NSNFP staff revised the PAEs and notified the audit team. The same EM/RW letter documented the verification and closure of the completed corrective actions.

Evaluation

Evaluation of these two CRs from the EM/RW audit did not identify any adverse trends, when compared with the other NSNFP DRs from 2004. The CRs represent different examples of document review and procedure implementation deficiencies that have since been corrected.

The completion and closure of corrective actions became a prolonged process because of the multi-disciplinary nature of the EM/RW audit team and the established protocols to communicate between DOE Offices and the NSNFP. The EM/RW audit team leader and the NSNFP staff spent considerable time to prepare correspondence, await review and approval, and then execute distribution to the affected parties. This cycle was repeated as needed to attain closure. Therefore, the apparent 229-day interval to close the CRs is considered an anomaly and does not reflect the NSNFP's expectations for timely closure of deficiency reports.

2.2 National Spent Nuclear Fuel Program Suppliers

During 2004, the only active government sector suppliers to the NSNFP were the Idaho National Engineering and Environmental Laboratory under contractor Bechtel BWXT Idaho, LLC and the Sandia National Laboratory. The Sandia supplier qualification audit identified one condition adverse to quality that was closed during the assessment.

3. CORRECTIVE ACTION TIMELINESS

The DRs/CARs were evaluated for timeliness of corrective action. Data for NSNFP PSO, NSNFP QA and NSNFP suppliers were evaluated by calendar year to determine if an adverse trend in timeliness of corrective action is present. The CDAs were not included in the computed average, because the CDAs are singular incidents that are closed during the assessment, resulting in zero days for closure.

Overall performance of all the SNF programs has improved in providing timely corrective action. The NSNFP QA Support organization tracks and reports on a biweekly basis a summary report of all open DRs. During calendar year 2004, the number and average duration that DRs remain open has declined.

Appendix B presents figures for showing the timeliness of DR closure as of December 31, 2004. There were no open reports.

3.1 National Spent Nuclear Fuel Program

The NSNFP is composed of the PSO and QA Support organizations. The two groups work to the same program management procedures. However, data were sorted to evaluate the individual organization duration. The figures in Appendix B show both the NSNFP PSO and QA Support organizations have improved their timeliness in reducing the average number of days to close DRs.

The average closure time for NSNFP PSO deficiency reports declined from 358 days in 1999, to 347 in 2000, to 256 in 2001 to 164 in 2002, to 88 in 2003, and dropping to 49 days for one DR identified and closed in 2004. The elapsed time taken to close the two CRs from the EM/RW audit was considered an anomaly and was not included in the computed average for 2004. The evaluation of data shows significant improvement in the reduced number of deficiencies and average timeliness of closure.

The average closure time for NSNFP QA Support deficiency reports showed an overall decline from 261 days in 1999, rising slightly to 294 days in 2000, dropping back to 174 days in 2001, and continuing a downward trend to an average of 117 days in 2002, zero deficiencies in 2003, to 104 days for three deficiencies identified and closed in 2004. The evaluation of data indicates that the average closure time was approximately 100 days.

3.2 National Spent Nuclear Fuel Program Suppliers

During 2004, the Sandia supplier qualification audit 04-SUPP-AU-001 identified one condition adverse to quality that was closed during the assessment. The condition was related to the qualification of welders prior to performing work on the DOE SNF canister attachments. The qualifications were completed and independently verified by a qualified examiner. The timeliness for resolution was satisfactory.

4. RESULTS

Data for the NSNFP and NSNFP suppliers were analyzed to identify organization-specific adverse trends. Subject codes, direct cause codes, root cause codes, and timeliness of corrective action completion were evaluated. The analysis of increases in frequency of codes, highest frequency of codes, and corrective action duration resulted in the identification of potential adverse trends in the NSNFP PSO and QA Support organizations. The analysis identified the following results. There were no deficient trends requiring management attention that were identified as a result of this analysis.

NSNFP

The evaluation of data shows a steady decline in number of deficiencies from 33 in 1999, to 30 in 2000, to 20 in 2001, to 15 in 2002, to 11 in 2003, to 10 in 2004 (4 DRs, 4 CDAs, and 2 CRs). The Pareto analysis showed that 6 of 10 deficiencies in 2004 (60%) were attributed to the Quality Program, primarily in the area of document reviews. There are no significant increasing trends. The timeliness of DR closure continued to improve.

Areas for Improvement

- Evaluation of Subject Code B.10, *Document Review*, identified problems with implementing document reviews. The corrective actions have resulted in process improvements to reduce the potential for recurrence. This area should continue to be monitored for effectiveness.
- Evaluation of Direct Cause Code 02A, *Personnel errors related to the lack of attention to detail*, showed downward trends (13 in 1999, to 11 in 2000, to 10 in 2001, 6 in 2002, 5 in 2003) and increased slightly to 7 in 2004. Various process improvements and changes to implementing procedures have been instituted. Discrepancies between hard copy and E-files have been minimized. The number of personnel errors associated with generating, transmitting and storing records has declined. Personnel attention to detail should continue to be monitored for effectiveness.

National Spent Nuclear Fuel Program Suppliers

During 2004, the only active government sector suppliers to the NSNFP were the Idaho National Engineering and Environmental Laboratory under contractor Bechtel BWXT Idaho, LLC and the Sandia National Laboratory. The Sandia supplier qualification audit identified one condition adverse to quality that was closed during the assessment.

Additional Oversight Activities

An EM/RW audit team audited the NSNFP and identified two CRs related to the NSNFP requirements matrix and nonquality affecting activities. The CRs were closed, but the elapsed time was prolonged due to the protocols established for communication between DOE Offices and the NSNFP.

5. BIBLIOGRAPHY

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3. National Spent Nuclear Fuel Quality Program Annual Trending Report, January–December 2002.
4. National Spent Nuclear Fuel Quality Program Annual Trending Report, January–December 2003.
5. Memo from R. L. Blyth, NE-ID, to Larry D. Vaughan, EM 3.2, “Formal Transfer of National Spent Nuclear Fuel Quality Assurance Oversight Responsibilities (NSNFP-QA-04-023),” April 1, 2004.
6. Memo from R. L. Blyth, NE-ID, to DOE Spent Nuclear Fuel Site Offices, “Formal Transfer of National Spent Nuclear Fuel Quality Assurance Oversight Responsibilities (NSNFP-QA-04-024),” April 1, 2004.
7. Memo from J. H. Roberson, DOE EM, to E. Sellars, NE-ID, “Issuance of Audit Report No. 04-DOE-AU-001 for the Department of Energy Idaho Operations Office national Spent Nuclear Fuel Program,” May 21, 2004.
8. Memo from P. M Golan, DOE EM, to E. Sellars, NE-ID, “Verification and Closure of the Department of Energy Idaho Operations Office National Spent Nuclear Fuel Project Completed Corrective Actions for Condition Reports No. NSNF (EM)-04-D-024 and -025 Issued in Audit Report No. 04-DOE-AU-001,” January 5, 2005.

Appendix A

Deficiency Reports Sorted by Subject and Cause Codes

Appendix A

Deficiency Reports Sorted by Subject and Cause Codes

NSNFP (PSO and QAS) Subject Code

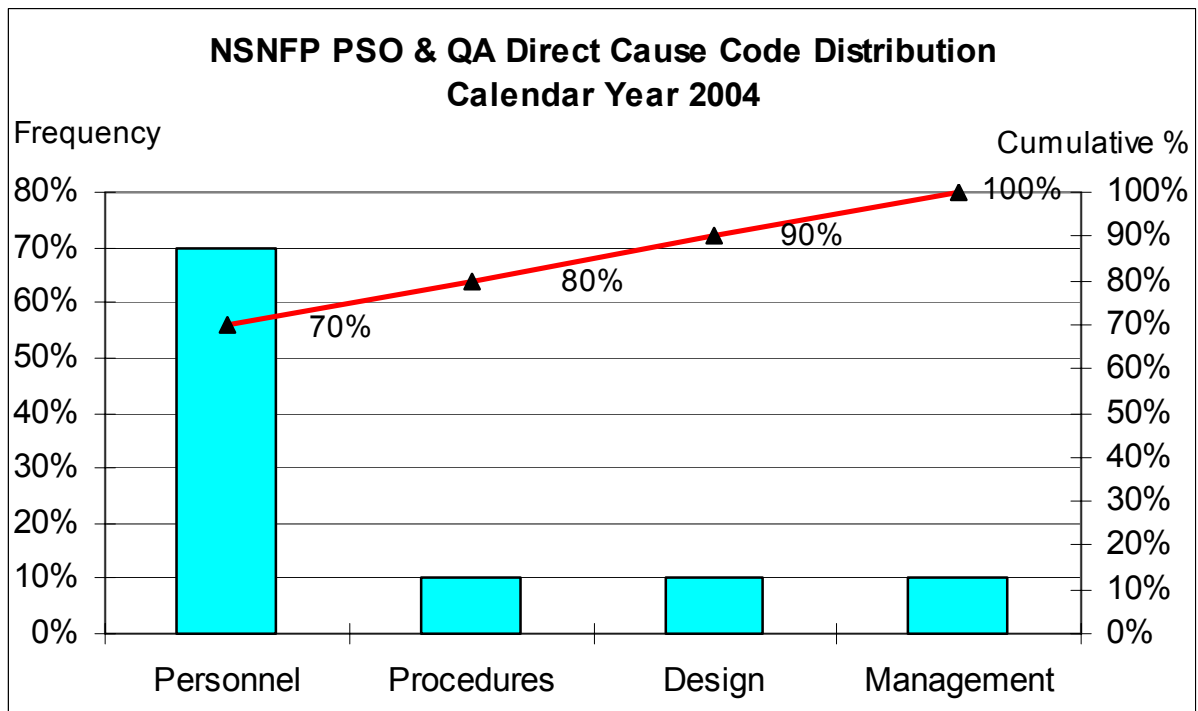
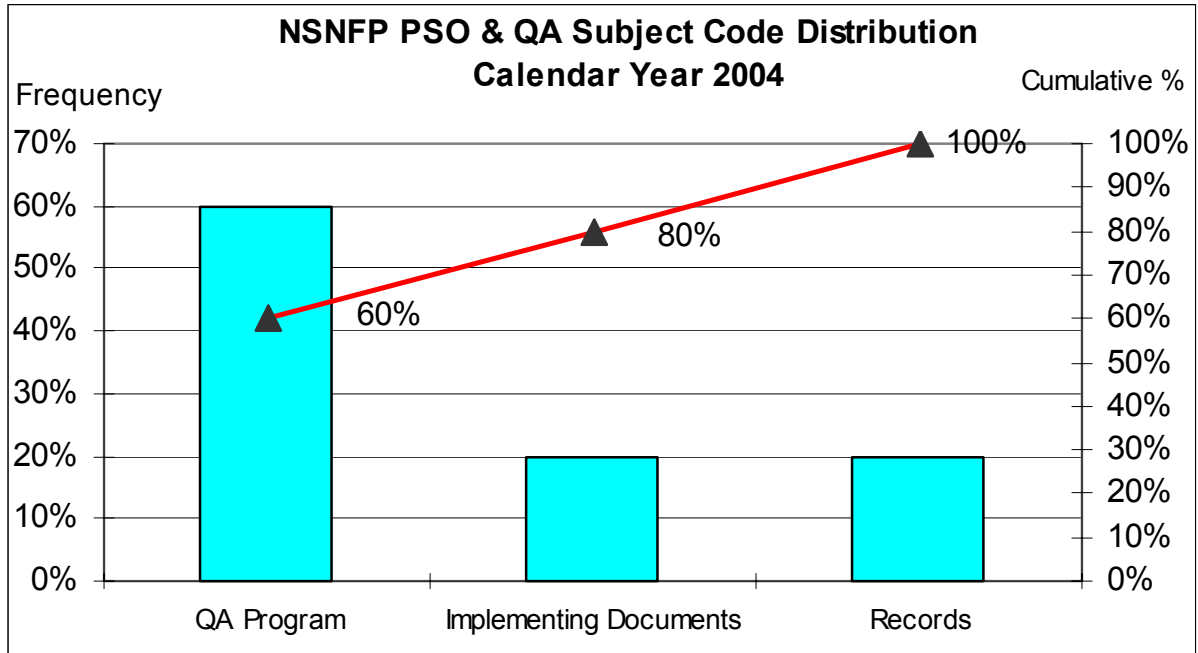
Subj. Code	Title	CY99	CY00	CY01	CY02	CY03	CY04
A	Organization	1	2	2	2	0	
B	QA Program	7	7	6	3	2	6
C	Design	3	1	0	0	1	
D	Procurement	4	3	0	0	5	
E	Implementin g Documents	9	3	4	1	1	2
F	Doc Control	1	2	2	1	1	
G	Purchased items	1	0	1	3	0	
J	Inspection		1				
K	Test				1		
P	Corrective Action	1	2	1	2	0	
Q	Records	2	3	3	0	1	2
R	Audits	1	2	1	0	0	
S	Software	2	4	0	0	0	
U	Scientific investigation				1		
V	Electronic Data Mgt	1			1		
	TOTAL	33	30	20	15	11	10

NSNFP (PSO and QAS) Direct Cause Code

Direct cause	Title	CY99	CY00	CY01	CY02	CY03	CY04
1	01-Procedures	15	14	6	6	3	1
2	02-Personnel	13	11	10	6	5	7
3	03-Management	2	3	1	3	1	1
4	04-Training					1	
5	05-Design	1	1			1	1
8	08-Software	2	1				
10	10-Misc.			3			
	TOTAL	33	30	20	15	11	10

NSNFP (PSO and QAS) Root Cause Code

Root cause	Title	CY99	CY00	CY01	CY02	CY03	CY04
1	01-Procedures	1					
2	02-Personnel	1					
3	03-Management	7			2		
	TOTAL	9	0	0	2	0	0



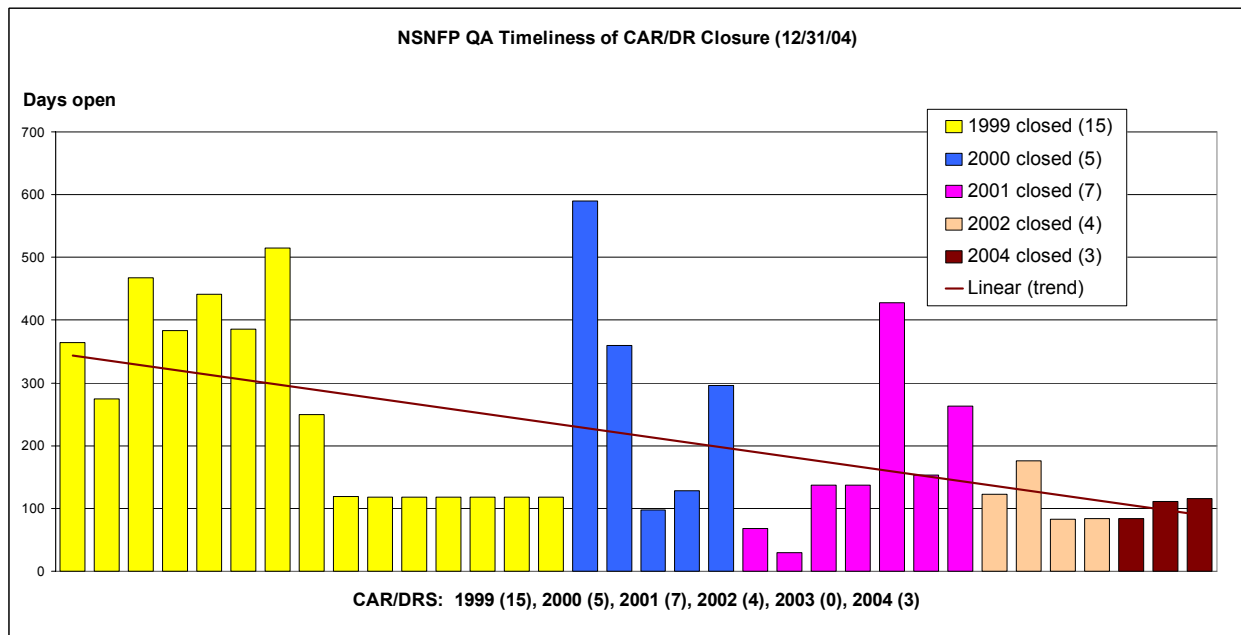
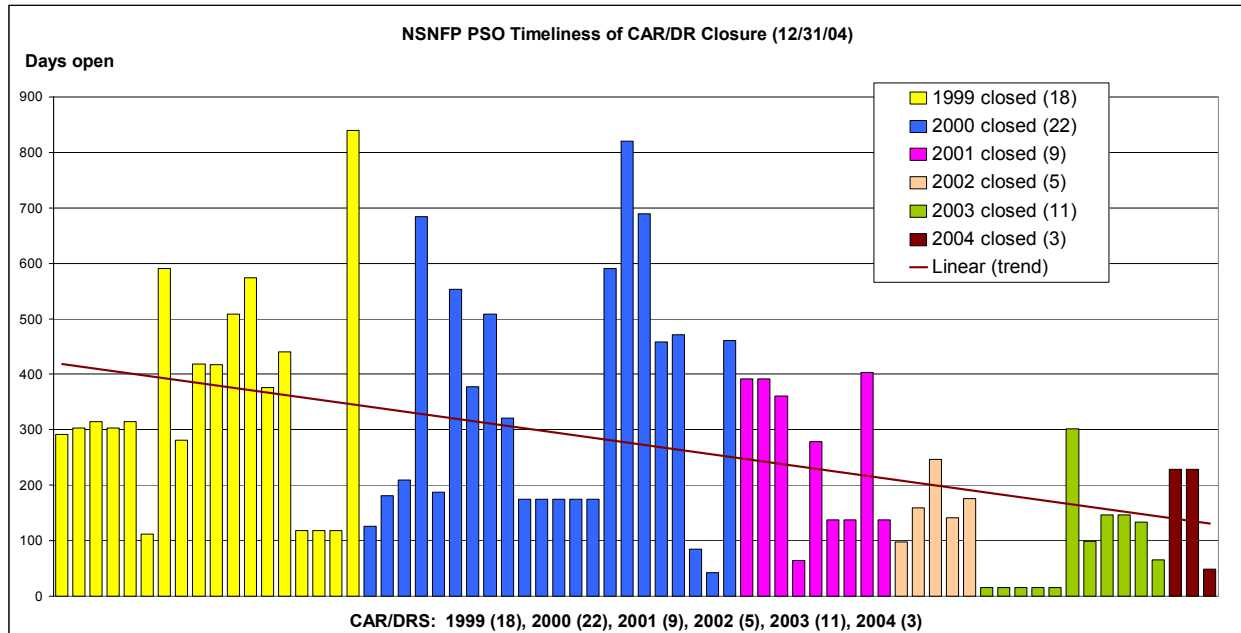
Appendix B

**Timeliness of Deficiency Report Closure
through December 31, 2004**

Appendix B

Timeliness of Deficiency Report Closure through December 31, 2004

(Open reports are indicated in black;
CDAs [corrected during audit] are not shown)



Appendix C

Deficiency Reports

Appendix C

Deficiency Reports (Status February 21, 2005)

Report	Resp Org	Signif	Open	Subject	Direct	Root	Close	Days	Type
99-NSNF-QAMA-001	NSNFP QA	TRUE	7/20/99	A.03	03 F a	03 A	7/18/00	364	CAR
EKO-QAT-9901	NSNFP QA	F	8/17/99	P.06.3	08 D		5/17/00	274	DR
99-NSNF-AU-125-003	NSNFP QA	F	9/1/99	Q.02	02 A d		12/11/00	467	DR
99-NSNF-AU-125-005	NSNFP QA	F	9/1/99	B.12	01 B g (2)		9/19/00	384	DR
99-NSNF-AU-125-006	NSNFP QA	F	9/1/99	B.01.3.1.1	03 A c		11/15/00	441	DR
99-NSNF-AU-125-007	NSNFP QA	F	9/1/99	E.05	02 A d		9/21/00	386	DR
99-NSNF-FSV-CK-002	NSNFP QA	F	9/17/99	E.03.2	01 B g (2)		2/13/01	515	DR
99-ARC04-9/99-001/RW DR#D-083	NSNFP QA	F	10/7/99	E.01	02 A d		2/3/00	119	DR
99-ARC04-9/99-003/RW DR#D-085	NSNFP QA	F	10/7/99	E.03	02 A d		2/2/00	118	DR
99-ARC04-9/99-005/RW DR#D-087	NSNFP QA	F	10/7/99	E.01	02 A d		2/2/00	118	DR
99-ARC04-9/99-006/RW DR#D-088	NSNFP QA	F	10/7/99	E.01	02 A d		2/2/00	118	DR
99-ARC04-9/99-007/RW DR#D-089	NSNFP QA	F	10/7/99	F.07.2.2	01 B d (2)		2/2/00	118	DR
99-ARC04-9/99-008/RW DR #D-090	NSNFP QA	F	10/7/99	R.08.5	02 A d		2/2/00	118	DR
99-ARC04-9/99-009/RW DR#D-091	NSNFP QA	F	10/7/99	E.01	02 A d		2/2/00	118	DR
99-ARC-04-9/99-011/RW CAR #C-005	NSNFP QA	TRUE	10/7/99	Q.02.2	02 A d	02 A	6/13/00	250	CAR
00-NSNF-AU-011-DR-005	NSNFP QA	F	6/19/00	P.03.2	03 A f		1/30/02	590	DR
00-RW-08/31/00-DR-002	NSNFP QA	F	10/17/00	B.01.2.4	03 A d		10/12/01	360	DR
00-RW-08/31/00-DR-004	NSNFP QA	F	10/17/00	Q.03.7	02 A d		1/23/01	98	DR
00-RW-08/31/00-DR-005	NSNFP QA	F	10/17/00	P.06.2	01 B g (2)		2/22/01	128	DR
00-RW-08/31/00-DR-006	NSNFP QA	F	10/17/00	R.01.6	03 A d		8/9/01	296	DR
01-NSNF-S-006-CDA-001	NSNFP QA	F	12/18/00	Q.02.2	02 A d		12/18/00	0	CDA
01-NSNF-S-006-DR-002	NSNFP QA	F	1/24/01	B.12.1.2	01 B g (4)		4/2/01	68	DR
01-NSNF-S-006-DR-003	NSNFP QA	F	1/24/01	E.01	02 A d		2/22/01	29	DR
01-NSNFP-AU-001-CDA-002	NSNFP QA	F	9/6/01	B.01.3.3	01 B d (1)		9/6/01	0	CDA
01-NSNFP-AU-001-DR-002	NSNFP QA	F	9/17/01	B.01.2.1	02 A d		2/1/02	137	DR
01-NSNFP-AU-001-DR-003	NSNFP QA	F	9/17/01	E.01	02 A d		2/1/02	137	DR
01-NSNFP-AU-001-DR-005	NSNFP QA	F	9/17/01	G.03.4	02 A d		11/19/02	428	DR
RW EM-01-D-144	NSNFP QA	F	10/4/01	R.01.1	01 C f		3/6/02	153	DR
RW EM-01-D-145	NSNFP QA	F	10/4/01	P.04.2	03 B a		6/24/02	263	DR
02-NSNF-AU-001-CDA-003	NSNFP QA	F	5/30/02	B.01.1	03 A		5/30/02	0	CDA
02-NSNF-AU-001-DR-001	NSNFP QA	F	5/30/02	A.03.2	01 C		9/30/02	123	DR
EM-ARC-02-10/ EM(0)-03-D-004	NSNFP QA	F	10/17/02	U.06.3.2	01 A a		4/11/03	176	DR
EM-ARC-02-10/ EM(0)-03-D-005	NSNFP QA	F	10/17/02	G.06.3.4	02 A d		1/8/03	83	DR
EM-ARC-02-10/ EM(0)-03-D-007	NSNFP QA	F	10/17/02	P.04.5.2	02 A d		1/9/03	84	DR
03-NSNF-S-001-CDA-001	NSNFP QA	F	12/6/02	B.12.1.2	02 A c		12/6/02	0	CDA
03-NSNF-S-005-CDA-001	NSNFP QA	F	5/7/03	Q.08.1.1	02 A b		5/7/03	0	CDA
04-NSNF-AU-001-CDA-002	NSNFP QA	F	3/8/04	B.12.2.4	02 A		3/8/04	0	CDA
04-NSNF-AU-001-CDA-001	NSNFP QA	F	3/9/04	B.10.7	02 A		3/9/04	0	CDA
04-NSNF-AU-001-DR-001	NSNFP QA	F	3/26/04	B.10.1	02 A a		7/15/04	111	DR
04-NSNF-AU-001-DR-002	NSNFP QA	F	3/26/04	Q.02	02 A b		6/18/04	84	DR
04-NSNF-AU-001-DR-003	NSNFP QA	F	3/26/04	E.05	02 A		7/20/04	116	DR
99-NSNF-S-123-001	NSNFP	F	6/28/99	B.03	01 B d (2)		4/14/00	291	DR
99-NSNF-S-123-002	NSNFP	TRUE	6/28/99	C.04.5.1.3	01 B d (2)	03 A c	4/26/00	303	CAR
99-NSNF-S-123-003	NSNFP	F	6/28/99	E.01	02 A d		5/8/00	315	DR
99-NSNF-S-127-01	NSNFP	F	6/28/99	B.03	01 B f		4/26/00	303	DR
99-NSNF-S-127-02	NSNFP	F	6/28/99	S.02	08 A b		5/8/00	315	DR
99-NSNF-S-127-03	NSNFP	F	6/28/99	B.10.6.3	01 C f		10/18/99	112	DR
99-NSNF-S-127-04	NSNFP	TRUE	6/28/99	V.01	01 A a	03 D	2/7/01	590	CAR
99-NSNF-QAMA-002	NSNFP	TRUE	7/20/99	C.01.4	05 A b	03 A c	4/26/00	281	CAR
99-NSNF-AU-125-001	NSNFP	TRUE	7/21/99	D.01.3.1.1	01 B g (3)	03 A a	9/11/00	418	CAR
99-NSNF-AU-125-004	NSNFP	F	7/22/99	B.01.2.3	01 B g (4)		9/11/00	417	DR
99-NSNF-S-126-001	NSNFP	F	7/29/99	E.01	02 A d		12/19/00	509	DR
99-NSNF-S-126-002	NSNFP	F	7/29/99	D.01.2.3	02 A d		2/22/01	574	DR
99-NSNF-AU-125-002	NSNFP	TRUE	9/1/99	D.01.3.3.1	01 B g (1)	03 A a	9/11/00	376	CAR

Report	Resp Org	Signif	Open	Subject	Direct	Root	Close	Days	Type
99-NSNF-AU-125-008	NSNFP	F	9/1/99	D.01.2.3	01 B		11/15/00	441	DR
99-ARC04-9/99-002/RW DR#D-084	NSNFP	F	10/7/99	C.02.1	02 A d		2/2/00	118	DR
99-ARC04-9/99-004/RW DR#D-086	NSNFP	F	10/7/99	B.12.1	01 B d (2)		2/2/00	118	DR
99-ARC04-9/99-010/RW DR#D-092	NSNFP	F	10/7/99	S.06.1.1	01 B g (3)		2/2/00	118	DR
99-NSNF-S-132-001	NSNFP	TRUE	10/12/99	G.02.1	01 B	01 B h	1/29/02	840	CAR
00-NSNF-S-005-001	NSNFP	F	1/31/00	B.03	02 A		6/5/00	126	DR
00-NSNF-S-003-1	NSNFP	F	2/24/00	D.01.6	05 B a		8/23/00	181	DR
00-NSNF-S-008-DR-001	NSNFP	F	3/16/00	E.01	02 A d		10/11/00	209	DR
00-NSNFP-03/13-DR-001	NSNFP	F	3/17/00	F.07.1.1	02 A d		1/30/02	684	DR
00-NSNFP-S-018-DR-001	NSNFP	F	3/31/00	B.12.1.2	01 B g (2)		10/4/00	187	DR
00-NSNFP-S-009-DR-001	NSNFP	F	4/27/00	S.01.1	02 A d		11/1/01	553	DR
00-NSNF-S-009-DR-002	NSNFP	F	4/27/00	S.06.2.2	01 B g (4)		5/10/01	378	DR
00-NSNF-S-009-DR-003	NSNFP	F	4/27/00	S.01.1	01 B g (2)		9/17/01	508	DR
00-NSNFP-05/09-DR-001	NSNFP	F	5/11/00	S.07	08 A c		3/28/01	321	DR
00-SUPP-AU-009-DR-001	NSNFP	F	6/7/00	E.01	01 B		11/28/00	174	DR
00-SUPP-AU-009-DR-002	NSNFP	F	6/7/00	B.12.1.2	01 B		11/28/00	174	DR
00-SUPP-AU-009-DR-003	NSNFP	F	6/7/00	D.01.3.3.2	01 B		11/28/00	174	DR
00-SUPP-AU-009-DR-004	NSNFP	F	6/7/00	A.02	01 B		11/28/00	174	DR
00-SUPP-AU-009-DR-005	NSNFP	F	6/7/00	J.09.1	01 B		11/28/00	174	DR
00-NSNF-AU-011-DR-001	NSNFP	F	6/19/00	A.01	01 B		1/30/02	590	DR
00-NSNF-AU-011-DR-002	NSNFP	F	6/19/00	B.01.2	02 A d		9/17/02	820	DR
00-NSNF-AU-011-DR-003	NSNFP	F	6/19/00	B.12.1	01 B g (4)		5/10/02	690	DR
00-NSNF-AU-011-DR-004	NSNFP	F	6/19/00	D.01	02 A		9/20/01	458	DR
00-NSNF-S-006-CDA-001	NSNFP	F	10/3/00	Q.02.2	02 A d		10/3/00	0	CDA
00-NSNF-S-006-DR-001	NSNFP	F	10/17/00	E.03.1	01 A a		1/31/02	471	DR
00-RW-08/31/00-DR-001	NSNFP	F	10/17/00	R.02.6	01 B g (2)		1/10/01	85	DR
00-RW-08/31/00-DR-003	NSNFP	F	10/17/00	F.05.3	01 B g (2)		11/28/00	42	DR
01-NSNF-S-004-CDA-001	NSNFP	F	12/19/00	B.12.1.4	02 A d		12/19/00	0	CDA
01-NSNF-S-004-DR-001	NSNFP	F	12/19/00	C.01.4	02 A d		3/25/02	461	DR
01-QAMA-9/18-DR-001	NSNFP	F	1/5/01	B.01.2.1	10 A		1/31/02	391	DR
01-QAMA-9/18-DR-002	NSNFP	F	1/5/01	B.12.2	10 A		1/31/02	391	DR
01-NSNF-S-002-DR-001	NSNFP	F	1/21/01	F.05.4	10 C		1/17/02	361	DR
01-NSNF-S-006-DR-001	NSNFP	F	1/24/01	F.05.1	01 B g (4)		3/29/01	64	DR
01-NSNF-S-009-CDA-001	NSNFP	F	4/26/01	Q.05.1.1	02 A d		4/26/01	0	CDA
01-NSNF-S-009-CDA-002	NSNFP	F	4/26/01	Q.02.2	02 A d		4/26/01	0	CDA
01-NSNF-S-009-DR-001	NSNFP	F	5/3/01	Q.08.1.1	01 B g (4)		2/6/02	279	DR
01-NSNFP-AU-001-CDA-001	NSNFP	F	9/5/01	A.03.2.6	01 B d (1)		9/5/01	0	CDA
01-NSNFP-AU-001-DR-001	NSNFP	F	9/17/01	A.01	02 A d		2/1/02	137	DR
01-NSNFP-AU-001-DR-004	NSNFP	F	9/17/01	E.01	02 A d		2/1/02	137	DR
01-NSNFP-AU-001-DR-006	NSNFP	F	9/17/01	B.01.2	02 A d		10/25/02	403	DR
01-NSNFP-AU-001-DR-007	NSNFP	F	9/17/01	E.01	02 A d		2/1/02	137	DR
02-NSNF-S-001-CDA-001	NSNFP	F	1/22/02	G.06.3.5	02 A a		1/22/02	0	CDA
02-NSNF-AU-001-CAR-001	NSNFP	TRUE	5/30/02	G.02.1	01 C	03 A f	1/31/03	246	CAR
02-NSNF-AU-001-CDA-001	NSNFP	F	5/30/02	K.05.3	02 A b		5/30/02	0	CDA
02-NSNF-AU-001-CDA-002	NSNFP	F	5/30/02	E.05	01 C		5/30/02	0	CDA
02-NSNF-AU-001-DR-002	NSNFP	F	5/30/02	A.03.2.1	01 B		9/5/02	98	DR
02-NSNF-AU-001-DR-003	NSNFP	F	5/30/02	B.06	03 A		11/5/02	159	DR
02-NSNF-AU-001-CAR-002R1	NSNFP	TRUE	8/21/02	A.03.2.1	03 A d	03 A d	1/9/03	141	CAR
02-SUPP-S-006-CDA-001	NSNFP	F	10/8/02	F.05.3	02 A b		10/8/02	0	CDA
EM-ARC-02-10/ EM(0)-03-D-006	NSNFP	F	10/17/02	V.01.3	01 A a		4/11/03	176	DR
BQA-FS-03-04-DR-001	NSNFP	F	2/11/03	D.03.1	04 B e		2/26/03	15	DR
BQA-FS-03-04-DR-002	NSNFP	F	2/11/03	D.02.3	02 A		2/26/03	15	DR
BQA-FS-03-04-DR-003	NSNFP	F	2/11/03	E.03.3.1	01 B c		2/26/03	15	DR
BQA-FS-03-04-DR-004	NSNFP	F	2/11/03	B.05.6	02 A b		2/26/03	15	DR
BQA-FS-03-04-DR-005	NSNFP	F	2/11/03	B.05.4	01 B a		2/26/03	15	DR
03-NSNFP-07/09-DR-001	NSNFP	F	7/9/03	C.01.2	02 A d		5/6/04	302	DR
03-NSNFP-08/14-DR-001	NSNFP	F	8/14/03	F.05.3	03 A c		11/21/03	99	DR
03-NSNFP-10/09-DR-001	NSNFP	F	10/10/03	D.01.3	01 B d (2)		3/4/04	146	DR
03-SUPP-S-001-DR-001	NSNFP	F	10/10/03	B.12.1	03 B d		3/4/04	146	DR
03-NSNFP-10/22-DR-001	NSNFP	F	10/22/03	D.01.6	05 B a		3/4/04	134	DR
04-NSNF-S-001-DR-001	NSNFP	F	12/23/03	D.01.3	02 A d		2/27/04	66	DR

Report	Resp Org	Signif	Open	Subject	Direct	Root	Close	Days	Type
RW NSNF(EM)-04-D-024	NSNFP	F	5/21/04	B.01.3	01 B g (4)		1/5/2005	229	DR
RW NSNF(EM)-04-D-025	NSNFP	F	5/21/04	B.04.4	03 A c		1/5/2005	229	DR
04-NSNFP-5/13-DR-001	NSNFP	F	5/26/04	B.10.2	05 B b		7/14/04	49	DR
04-NSNF-S-003-CDA-001	NSNFP	F	6/17/04	E.05	02 A		6/17/04	0	CDA
05-NSNF-S-002-CDA-001	NSNFP	F	11/11/04	Q.02.1.2	02 A d		11/11/04	0	CDA
04-SUPP-AU-001-CDA-001	Sandia supplier	F	7/28/04	I.02	04 C a		7/28/2004	0	CDA

General Notes

Report Identification of Deficiency Report, Corrective Action Report, or Condition Corrected during Audit.

Resp Org Organization responsible for correcting the condition.

NSNFP QA	National Spent Nuclear Fuel Program Quality Assurance Group
NSNFP	National Spent Nuclear Fuel Program Support Organization
Sandia Supplier	NSNFP Supplier provided by Sandia National Laboratory

Signif Significant condition adverse to quality as defined by NSNFP Procedure 16.02.

Open Date of NSNFP QASM approval for issuance.

Subject Subject code based on the QARD requirement violated.

Direct Direct cause code based on the direct cause of the condition identified in the report. Appendix D lists the cause codes used by NSNFP Procedure 16.03.

Root (For CARs only) Root cause code based on the root cause of the condition identified in the report. Appendix D lists the cause codes used by NSNFP Procedure 16.03.

Close Date of NSNFP QA Staff Manager (QASM) approval for closure.

Days Duration in number of days the deficiency report remains open until verified as closed by the NSNFP QASM. This is computed as the difference between the open and closure dates. For reports that have not been closed, the number of days open is based on February 21, 2005, when this report was prepared.

Type Identifies the type of deficiency:
DR denotes a deficiency report for a condition adverse to quality
CAR denotes a significant condition adverse to quality
CDA denotes a condition corrected during the audit or surveillance.

Status Identifies the status of the deficiency (closed or open) as of February 21, 2005, when this report was prepared. The data analyses and trend charts were based on the status at the end of the calendar year (December 31, 2004).

Appendix D

Cause Codes

Appendix D—Cause Codes

Code	Description	Code	Description
01	PROCEDURES/IMPLEMENTING DOCUMENTS	04 A b	No learning objective
01 A	Procedure not used	04 B	Lack of understanding
01 A a	No/incomplete documents/procedure	04 B a	Learning objectives need improvement
01 A b	Lost/missing documents/procedure	04 B b	Lesson plan need improvement
01 A c	Procedure difficult to use	04 B c	Training instructions need improvement
01 A d	Procedure not available or inconvenient to use	04 B d	Testing need improvement
01 A e	Procedure use not required but should be	04 B e	Continued/Refresher training need improvement
01 B	Inadequate/wrong procedure	04 C	Inadequate training methods
01 B a	Typographical error	04 C a	Incomplete training
01 B b	Sequence wrong	04 C b	Inadequate facilities
01 B c	Technical facts/data wrong	04 C c	Continuous training inadequate
01 B d	Requirements:	04 C d	Inadequate testing or measure of aptitude
01 B d (1)	updates not incorporated	05	DESIGN/SCIENTIFIC INVESTIGATION
01 B d (2)	not covered/addressed	05 A	Design Documents/ Scientific Investigation
01 B e	Wrong documents/procedure used	05 A a	Documents do not exist
01 B f	Wrong revision used	05 A b	Data/computation wrong, incomplete, or less than adequate
01 B g	Implementing documents/process:	05 A c	Requirements:
01 B g (1)	not adequate/can't be followed	05 A c (1)	not identified
01 B g (2)	Incomplete	05 A c (2)	incorrectly identified
01 B g (3)	does not exist	05 A d	Scientific investigation not performed per study plan
01 B g (4)	Does not describe HOW the requirement will be implemented	05 A e	Problems not anticipated in design or investigation
01 B h	Conflicting instructions	05 A f	Equipment environment not considered
01 C	Error in following the procedure	05 B	Technical Review
01 C a	Format confusing	05 B a	Review not performed
01 C b	More than one action per step	05 B b	Review inadequate
01 C c	Multiple references	05 B c	Reviewer lack of independence
01 C d	No signoff space	06	FABRICATION/INSTALLATION
01 C e	Checklist misused	06 A	Fabrication/installation
01 C f	Information/Data/Computation wrong or incomplete	06 A a	Fabrication/installation error
01 C g	Ambiguous instructions	06 A b	Fabrication/installation not per design
01 C h	Inadequate limits/parameters	06 A c	Wrong sequence fabrication/installation
01 D	Self imposed requirement - not needed for QARD compliance	06 A d	Wrong material
02	PERSONNEL - HUMAN PERFORMANCE	06 A e	Defective material
02 A	Lack of attention to a task	06 A f	Lack of proper tools used for fabrication/installation
02 A a	Carelessness	06 B	Quality Control
02 A b	Oversight	06 B a	No inspection
02 A c	Work overload	06 B b	Wrong inspection instructions
02 A d	Procedure not used, or used improperly	06 B c	Wrong inspection technique
02 A e	Wrong revision used	07	RELIABILITY SYSTEM
02 A f	Lack of direction	07 A	Inadequate Preventative Maintenance
02 B	Lack of Qualification	07 A a	No preventative maintenance for equipment
03	MANAGEMENT SYSTEM	07 A b	Inadequate preventative maintenance for equipment
03 A	Standards, Policies, Administrative Controls (SPAC)	07 B	Unreliable Equipment
03 A a	No SPAC	07 B a	Equipment past design lifetime
03 A b	SPAC not used	07 B b	Equipment repeated failure, previous corrective action inadequate
03 A c	Inadequate communication of SPAC	08	SOFTWARE
03 A d	SPAC Recently changed	08 A	Computer software controls
03 A e	Inadequate drawings/prints	08 A a	Inadequate software design
03 A f	Inadequate accountability	08 A b	Inadequate validation, verification or testing
03 B	Immediate supervision	08 A c	Defects:
03 B a	Inadequate job/task analysis	08 A c (1)	Inadequate defect report
03 B b	No preparation/planning	08 A c (2)	Inadequate defect resolution
03 B c	Inadequate selection of performer(s)	08 A d	Inadequate software maintenance
03 B c (1)	Individual not qualified	08 A e	Inadequate software identification
03 B c (2)	Team selection not balanced/adequate	08 B	Inadequate user information manuals
03 B d	Performers not trained	08 C	Inadequate control of usage
03 B e	No supervision during work	08 D	Inadequate data update
03 B f	Infrequent task	09	PROCUREMENT
03 C	Communications	09 A	Vendor not in the Approved Supplier List
03 D	No/late communication	09 B	Vendor not qualified
03 E	Misunderstood verbal communication	09 C	Receiving inspection
03 F	Audits/Evaluations	09 C a	No receiving inspection
03 F a	No Audits/Evaluations	09 C b	Inadequate Receiving inspection
03 F b	Audit checklist misused	10	MISCELLANEOUS OR MULTIPLE AREAS
04	TRAINING	10 A	Multiple Causes Present
04 A	No training	10 B	Material/Equipment Inadequate
04 A a	Decided not to train	10 C	Unknown
		10 D	Natural Causes
		10 E	Planned Failure